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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/625,711	07/22/2003	Patrick Noll	COS-933	8121

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EXAMINER	
TESKIN, FRED M	
ART UNIT	PAPER NUMBER
1713	
MAIL DATE	DELIVERY MODE
09/07/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/625,711	NOLL, PATRICK	
	Examiner	Art Unit	
	Fred M. Teskin	1713	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 August 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *3-5,7 and 12-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *3, 4, 12-26* is/are allowed.

6)☒ Claim(s) *5 and 7* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Amendments presented in the reply filed August 16, 2007 are acknowledged and deemed to obviate the objection and Section 112 rejection presented in the Office action of February 27, 2007.

The previously indicated allowability of claims 5 and 7 is withdrawn in view of newly discovered prior art to Selliers and Skeirik. Rejections based on the new references follow. Accordingly, the finality of the previous Office action is ***withdrawn*** and prosecution herein reopened.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim 5 is rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Selliers (USP 6144897).

Selliers broadly discloses (col. 1, ll. 5-10 and col. 2, ll. 40+) a control method for a process of synthesis, in particular of polymer, in equipment comprising at least one reactor that can be assimilated to a perfectly mixed reactor, comprising the steps of: (a) inputting set points concerning controlled variables (C_{GR}); (b) computing, by means of a prediction unit (OP), predictions of controlled variables (P_{GR}), based on measurements of process manipulated variables (M_{GC}); (c) use of a control unit to compute the set points of the process manipulated variables (C_{GC}), based on the set points and the predictions of the controlled variables; and (d) transmission of the set points of the

process manipulated variables to actuators, or to control units controlling the actuators, to act on the course of the process. The OP is based on a mathematical model of the process (col. 2, ll. 63+); and since the set points correspond to controlled variables related to the properties of the product and/or the course of the process (*Id.*, ll. 43-46 and col. 4, 20-25), they are seen to correspond to the "desired product properties and reactor characteristics" used in the applicants' process as the basis by which a mathematical model predicts a plurality of process control parameters (claim 5, ll. 3-5).

Regarding use of the mathematical model to control a process for producing polyethylene (PE) using a loop reactor, Selliers specifically describes the modeling of such a process: see column 14, lines 34 *et seq*. and Fig. 1. As described, the PE synthesis takes place in a loop reactor in suspension in a suitable solvent, with continuous injection of ethylene, hydrogen, butene and catalyst. The continuous synthesis is modeled with the aid of a LAG function (col. 15, ll. 38+), the application of which to the calculation of a mass balance of the reactor contents is detailed in column 16, lines 23 *et seq*. After the model of the process is established, Selliers describes use of an algorithm to calculate the parameters necessary for control of the process (col. 17, ll. 27+). The described control system includes an algorithm (slave) based on a material balance and the chemical kinetics of the reaction, which provides the feed flow rate controllers with the set points of flow rates of reactants which are necessary to satisfy the set points of concentrations imposed by the master algorithm and the set point of the production rate of the process (*Id.*, ll. 53-61).

As such, Selliers is seen to identify a material/mass balance and chemical reaction kinetics as variables in a control system for controlling the production of PE in a loop reactor, using a mathematical model that includes a prediction unit for predicting controlled variables (corresponding to applicants' process control parameters) based on inputted set points (corresponding to applicants' desired product properties and reactor characteristics). Further, since chemical reaction kinetics intrinsically depend on kinetics of the catalyst used in the described PE production process, its disclosure in Selliers amounts to an inherent teaching of catalyst kinetics, per claim 5, as a variable (along with material/mass balance) used in the patentee's control system.

Alternatively, it would have been obvious from the teachings of Selliers as discussed above for an ordinarily skilled practitioner to select both mass balance of the reactor contents and catalyst kinetics as variables of the patentee's control system for controlling the continuous production of PE in a loop reactor. And since claim 5 recites "settling phenomena in an outlet settling leg" in the alternative (i.e., in a Markush grouping of alternative variables), it is not necessary to the rejection that Selliers teach or suggest this non-essential feature of the claimed invention.

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Selliers in view of Skeirik (USP 5282261).

Selliers is applied as in the preceding rejection. Claim 7 is identical to claim 5 but for the additional limitation that the controller is a neural network based controller. This limitation is not disclosed by Selliers.

Nevertheless, the concept of applying computer neural network process measurement and control system to control of manufacturing processes, and specifically chemical processes, is well known in the prior art as evidenced by Skeirik (see, e.g., col. 1, ll. 20-25). Skeirik recognizes the limitations of conventional computer models as predictors of desired measurements (cols. 4-6) and teaches various neural network control systems for overcoming the deficiencies in such conventional technology (col. 6, ll. 35+), as well as the benefits of integrating a modular neural network with other control functions (col. 37, ll. 30+). Thus, it would have been obvious to one of ordinary skill in the art at the time of applicants' invention to integrate a neural network based controller as per Skeirik into the control system of Selliers, since Skeirik broadly teaches control of chemical processes in general and, hence, one so skilled would have expected the neural network control systems described therein to be applicable to the particular chemical process of Selliers. The expectation of achieving the significant benefits of neural network process control as taught by Skeirik during continuous production of PE in a loop reactor as per Selliers would have provided the requisite motivation to combine the references in the manner proposed and thereby produce the claimed invention.

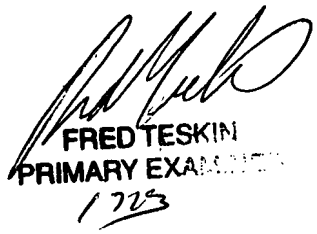
Claims 3, 4 and 12-26 are maintained as allowable on the present record.

In view of the new grounds of rejection, this action is made non-final.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner F. M. Teskin whose telephone number is (571) 272-1116. The examiner can normally be reached on Monday through Thursday from 7:00 AM - 4:30 PM, and can also be reached on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reached on (571) 272-1114. The appropriate fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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